Macroscopic multi-class dynamic assignment in a small urban area

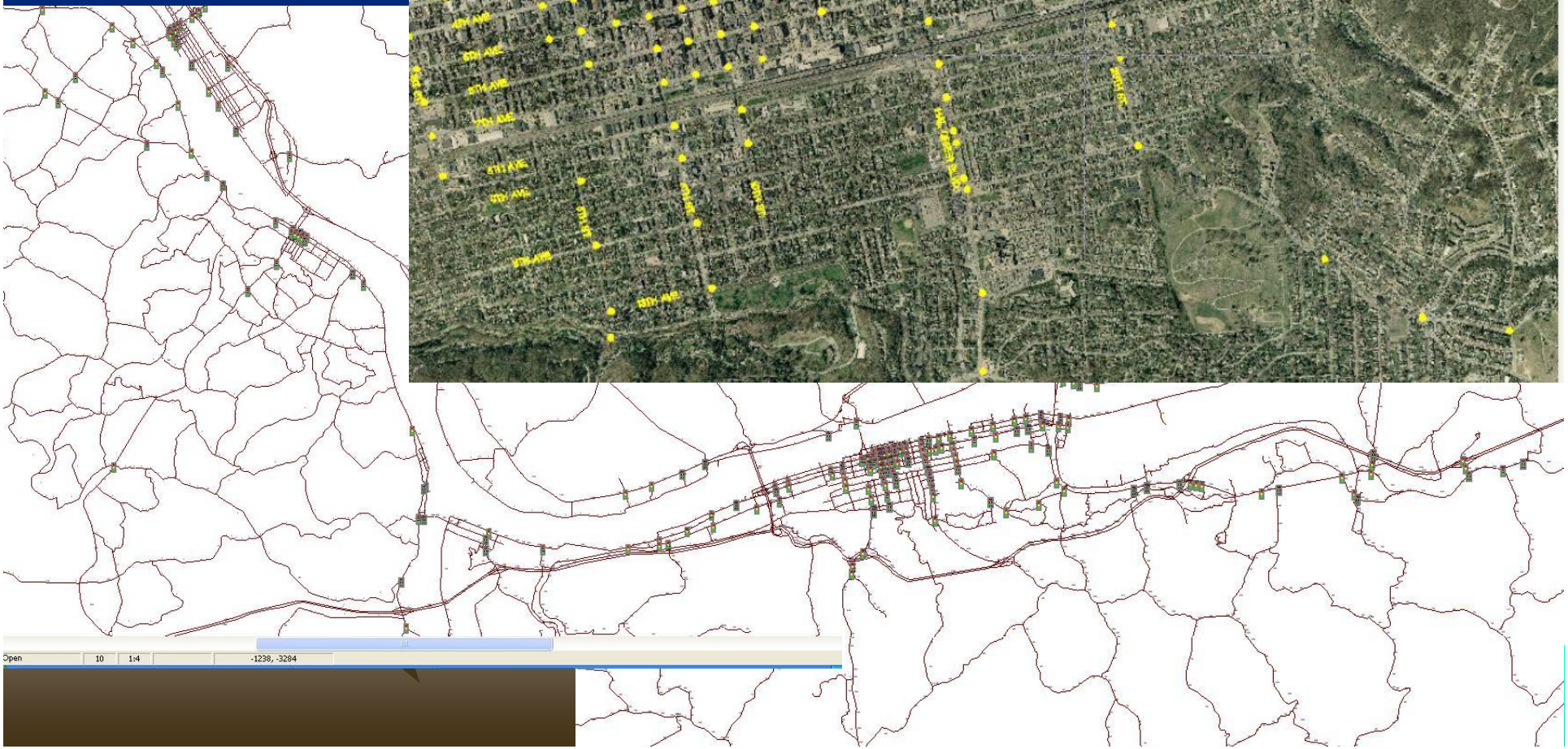
Sam Granato, Ohio DOT (on behalf of the Huntington area MPO)

Elements of the DTA:

- Same as 4-step process, except that full day is broken into time intervals with variable trip start times within intervals, travel paths can change “mid-trip” with the spillover across intervals.
- Accounts for time-dependent network/traffic management and traveler attributes.
- Better identification of places, times, and durations of congestion/poor LOS than static assignment.
- Deterministic (HCM operational) intersection controls, with accel/decel delay by vehicle class a function of travel speed, and 2-lane road speeds also constrained by opposite-direction volume.
- Saturation flows dynamic & set to lower initial values in off-peak periods based on driver/purpose characteristics.
- True shape network with “free-flow” times and truck PCE values also accounting for curves, grades, and railroad crossings.
- MSA assignment with feedback to distribution after every iteration.
- Zone-specific hour of day breakdowns & friction factors by trip purpose/direction, and PHFs and design hours developed with HOD adjustments.

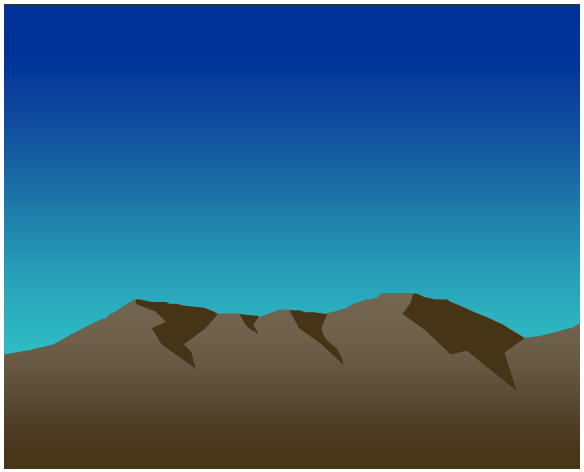
Huntington area network and traffic control

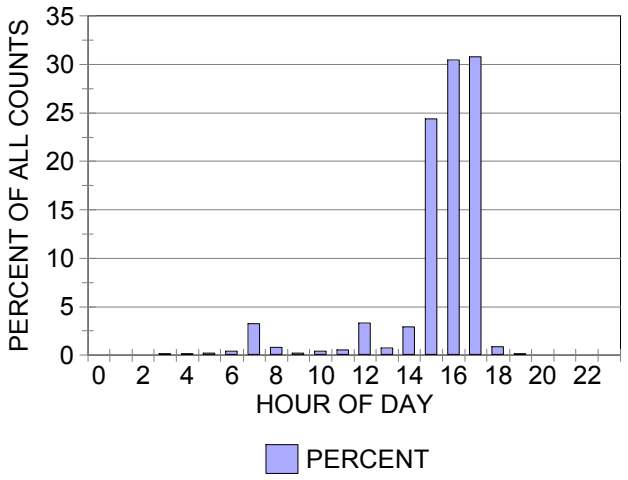
1200 modeled intersections
200 signals
UZA population: 180,000
MSA population: 290,000
Max trip length = 2 hours
9% of trips > 30 minutes

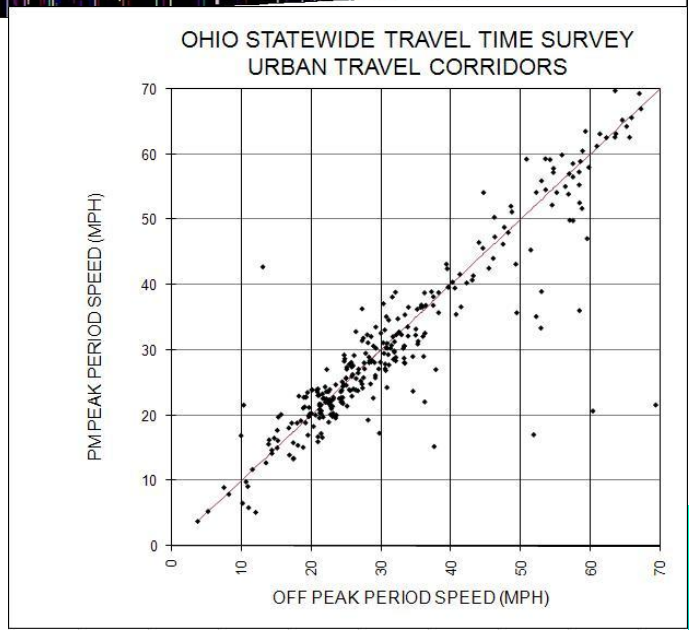


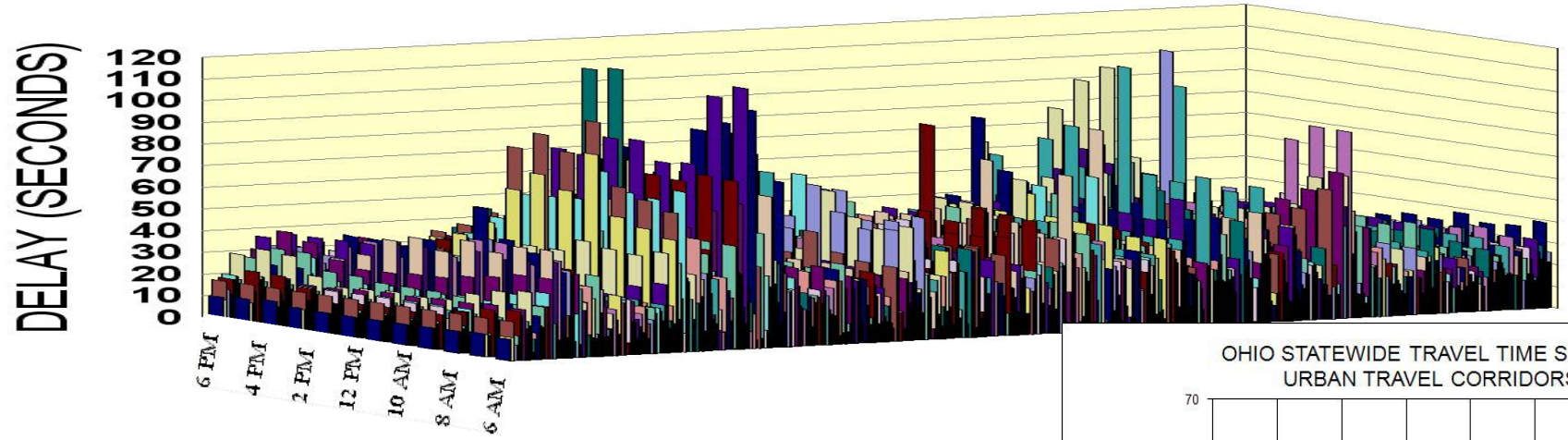
When is the “peak” hour?

(Statewide in Ohio, the highest hourly volumes occur during the PM peak period 85% of the time, but has the higher delay only 55% of the time)

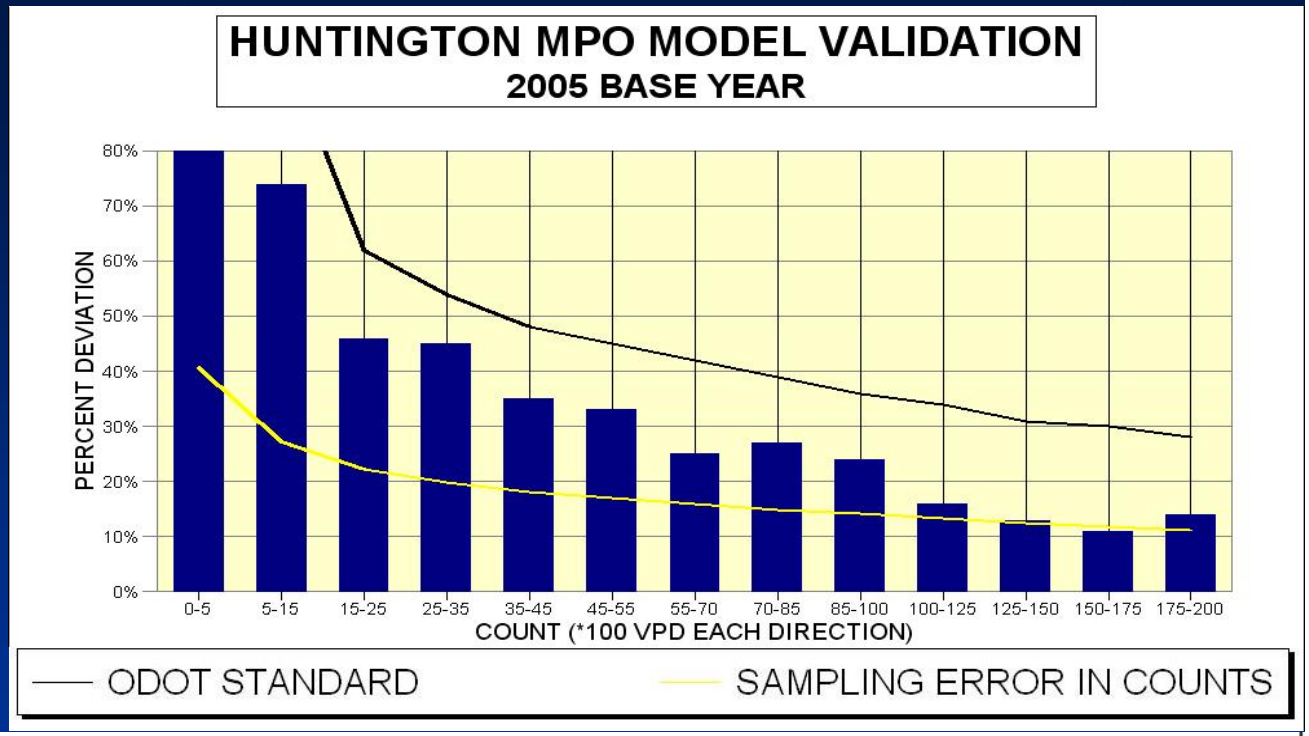


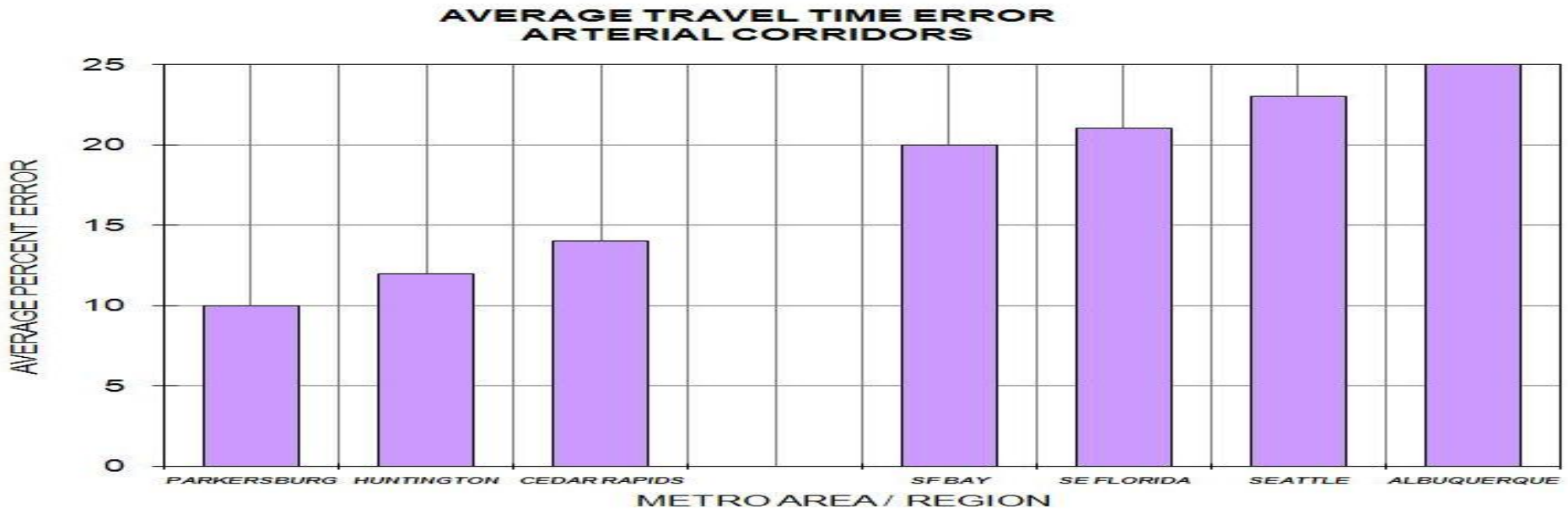






Validation stats:





Questions?

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For a more detailed description of the DTA methodology used:

ftp://alpha1.csd.uwm.edu/pub/horowitz/QRSII7ReferenceManual.pdf